

**IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF TEXAS  
WACO DIVISION**

STREAMSCALE, INC.,

Plaintiff,

v.

CLOUDERA, INC., AUTOMATIC DATA  
PROCESSING, INC., EXPERIAN PLC,  
WARGAMING (AUSTIN), INC., and INTEL  
CORPORATION,

Defendants.

Civil Action No. 6:21-cv-00198 ADA

**CLOUDERA, INC.’S MOTION FOR SUMMARY  
JUDGMENT OF NON-INFRINGEMENT**

**REDACTED PUBLIV VERSION**

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Pursuant to Federal Rule of Civil Procedure 56, Defendant Cloudera, Inc. (“Cloudera”) moves for summary judgment of non-infringement.

## I. INTRODUCTION

As detailed below, Plaintiff’s infringement contentions suffer from a fatal flaw—Plaintiff alleges direct infringement, but Cloudera cannot possibly directly infringe, because it does not provide its customers with all the elements of the asserted claims.

Specifically, the asserted claims of the patents-in-suit all require a combination of: (i) computer hardware components, such as a processor and memory; and (ii) computer software, configured to perform particular error correcting code functionality. Cloudera, however, distributes only software, not hardware, and its software, when provided to customers, is not configured to perform erasure correction coding. Cloudera, therefore, cannot directly infringe the patents-in-suit as a matter of law, regardless of what the customer ultimately does with the software. The Court should therefore grant summary judgment of non-infringement in Cloudera’s favor.

## II. FACTUAL BACKGROUND

### A. Erasure Coding Technology

The patents at issue are directed to the field of error correction coding, and in particular a form of error correction coding known as “erasure coding.” Ex. 1, U.S. Pat. No. 8,683,296, at 1:10-14.

As a general matter, when storing electronic data, backups are needed to ensure that data is not lost if a storage device fails. The simplest type of backup is replication, meaning that multiple copies of the data is stored. In “3X” replication, the data is stored three times (across numerous, distributed computers), so that if any part of the data is lost as a result of a failure of a storage device, the data can still be recovered from a copy. [REDACTED]

[REDACTED]

[REDACTED]

It is possible, however, to back up data without making a complete copy of the data. By taking the original data set and performing well-known mathematical operations (specifically, “Galois Field” math, developed by French mathematician Évariste Galois in the early 1800s) on the data using well-known mathematical codes (“Reed-Solomon” codes, developed by Irving S. Reed and Gustave Solomon at MIT in 1960), a smaller set of “check”, or “parity” data can be created that can be used to restore any part of the original data that is subsequently lost as a result of a failure of a storage device. See [REDACTED]; Ex. 1 [8’296 patent], at 2:1-3, 3:8-20. This is erasure coding. See Ex. 1 [8’296 patent], at 1:11-51. [REDACTED]

[REDACTED]

[REDACTED] The downside of erasure coding, however, is that it requires substantial additional processing and network bandwidth usage, which taxes the overall system and slows performance. Ex. 1 [8’296 patent], at 1:52-2:8; [REDACTED] Erasure coding based on Reed-Solomon codes, and the known tradeoff between disk storage and processing speed, both well predate the patents-in-suit. (*Id.*)

## B. The Patents-In-Suit

Plaintiff StreamScale, Inc. (“StreamScale”) asserts U.S. Patent Nos. 8,683,296 (“the 8’296 Patent”), 9,160,374 (“the ’374 Patent”), 9,385,759 (“the ’759 Patent”), 10,291,259 (“the ’259 Patent”), and 10,666,296 (“the 10’296 Patent”).<sup>2</sup> These five patents are all related, and all share the same specification and title: “Accelerated Erasure Coding System and Method.”

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<sup>1</sup> Dr. Conte is Plaintiff’s infringement expert; Dr. Ramchandran is Defendant’s noninfringement expert.

<sup>2</sup> StreamScale previously asserted a sixth patent, U.S. Pat. No. 10,003,358 but that patent has been dropped.

The asserted patents all purport to claim systems for “accelerated” erasure coding. In essence, the patents combine well-known erasure coding methods with parallel processing, to speed up the required mathematical calculations.

StreamScale asserts a total of 28 claims,<sup>3</sup> listed below. Independent claims are underlined.

| Patent  | Asserted Claims            |
|---|----------------------------|
| U.S. Patent No. 8,683,296 (“the ’8-296 Patent”)   | <u>1-4</u> , <u>34</u> -36 |
| U.S. Patent No. 9,160,374 (“the ’374 Patent”)     | <u>1</u> , <u>5-6</u>      |
| U.S. Patent No. 9,385,759 (“the ’759 Patent”)     | <u>1</u> , <u>5-7</u>      |
| U.S. Patent No. 10,291,259 (“the ’259 Patent”)    | <u>12-16</u> , <u>19</u>   |
| U.S. Patent No. 10,666,296 (“the ’10-296 Patent”) | <u>1-8</u>                 |

The claims listed in blue in the above chart are all “system” claims. They each recite “A system for accelerated error-correcting code (ECC),” or “A system adapted to use accelerated error-correcting code (ECCC),” or “An accelerated error-correcting code (ECC) system” that includes a combination of hardware and software. Claim 1 of the 8’296 patent is reproduced below:

1. A system for accelerated error-correcting code (ECC) processing comprising:
  - a processing core for executing computer instructions and accessing data from a main memory; and
  - a non-volatile storage medium for storing the computer instructions, wherein the processing core, the non-volatile storage medium, and the computer instructions are configured to implement an erasure coding system comprising:
    - a data matrix for holding original data in the main memory;
    - a check matrix for holding check data in the main memory;
    - an encoding matrix for holding first factors in the main memory, the first factors being for encoding the original data into the check data; and
    - a thread for executing on the processing core and comprising:
      - a parallel multiplier for concurrently multiplying multiple data entries of a matrix by a single factor; and
      - a first sequencer for ordering operations through the data matrix and the encoding matrix using the parallel multiplier to generate the check data.

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<sup>3</sup> See Ex. 4, StreamScale’s February 13, 2023 Letter stipulating to the asserted claims.

In this claim, at least the “processor core” and “non-volatile storage medium” are hardware components. The software component, the “computer instructions,” are “configured to implement” certain erasure coding functionality.

The other asserted system claims also recite a combination of hardware and software. The table below lists hardware components required to infringe each of the independent system claims.

| <b>Independent Claim</b> | <b>Hardware Components</b>   |
|--------------------------|--|
| '8-296 claim 1           | <ul style="list-style-type: none"> <li>• “processing core”</li> <li>• “non-volatile storage memory”</li> </ul>   |
| '374 claim 1             | <ul style="list-style-type: none"> <li>• “processing core”</li> <li>• “non-volatile storage memory”</li> </ul>   |
| '759 claim 1             | <ul style="list-style-type: none"> <li>• “processing core”</li> <li>• “one or more non-volatile storage media”</li> <li>• “an input/output (I/O) controller”</li> </ul>  |
| '259 claim 12            | <ul style="list-style-type: none"> <li>• “at least one processor”</li> <li>• “at least one system drive”</li> <li>• “a plurality of data drives”</li> <li>• “more than two check drives”</li> <li>• “at least one first input/output (I/O) controller”</li> <li>• “at least one second input/output (I/O) controller”</li> </ul>   |
| '10-296 claim 1          | <ul style="list-style-type: none"> <li>• “at least one processing circuit comprising a plurality of central processing unit (CPU) cores”</li> <li>• “at least one system drive”</li> <li>• “a plurality of data drives”</li> <li>• “at least four check drives”</li> <li>• “at least one input/output (I/O) controller”</li> </ul> |

The final asserted independent claim, Claim 34 of the 8'296 patent, also describes a computer system with both hardware and software components, but first recites the hardware components (“a processing core” and “a main memory”) in the preamble. As discussed below, however, the hardware components in the preamble of Claim 34 are still limitations of the claim.

This fact—that the asserted claims all require hardware—compels noninfringement. As discussed below, Cloudera only distributes software to customers. It does not provide hardware. Cloudera therefore cannot be a direct infringer.

In addition, all of the asserted claims require that the computer instructions (code) are “configured to” implement ECC or that it “implement” ECC. With respect to the 8’296 Patent, the ’374 Patent, the ’759 Patent, and the 10’296 Patent, each of the independent claims recites a structure or program “configured to” implement an erasure coding system, as specified below (emphasis added):

“A system for accelerated error-correcting code (ECC) processing comprising: a processing core for executing computer instructions ... and a non-volatile storage medium ..., wherein the processing core, the non-volatile storage medium, and the computer instructions are configured to implement an erasure coding system ...” (8’296 Patent, claim 1)

“A non-transitory computer-readable storage medium containing a computer program comprising a plurality of computer instructions ... the computer instructions being configured to implement an erasure coding system ...” (8’296 Patent, Claim 34)

“A system for accelerated error-correcting code (ECC) processing comprising: a processing core for executing computer instructions ... and a non-volatile storage medium for storing the computer instructions, wherein the processing core, the non-volatile storage medium, and the computer instructions are configured to implement an erasure coding system ...” (’374 Patent, Claim 1)

“A system for accelerated error-correcting code (ECC) processing comprising: a processing core for executing computer instructions ...; one or more non-volatile storage media ...; and an input/output (I/O) controller ..., wherein the processing core, the non-volatile storage medium, the I/O controller, and the computer instructions are configured to implement an erasure coding system ...” (’759 Patent, Claim 1)

“An accelerated error-correcting code (ECC) system operating across multiple drives, comprising: at least one processing circuit comprising a plurality of central processing unit (CPU) cores that executes CPU instructions and loads original data from a main memory ...; a plurality of data drives ...; at least four check drives ...; and at least one input/output (I/O) controller ...; wherein the processing circuit, the CPU instructions, the main memory, the plurality of data drives, the at least four check drives, and the at least one I/O controller are configured to implement a

multi-core erasure encoding system ...” (10’296 Patent, Claim 1)

“An accelerated error-correcting code (ECC) decoding system operating across multiple drives, comprising: at least one processing circuit comprising a plurality of central processing unit (CPU) cores that executes CPU instructions and loads original data and check data from a main memory ...; a plurality of data drives ...; at least four check drives ...; and at least one input/output (I/O) ...; wherein the processing circuit, the CPU instructions, the main memory, the plurality of data drives, the at least four check drives, and the at least one I/O controller are configured to implement a multi-core erasure decoding system ...” (10’296 Patent, Claim 5)

With respect to the ’259 Patent, independent claim 12 recites a structure that “implement[s]” an erasure coding system (emphasis added):

“A system adapted to use accelerated error-correcting code (ECC) processing to improve the storage and retrieval of digital data distributed across a plurality of drives, comprising: at least one processor comprising at least one single-instruction-multiple-data (SIMD) central processing unit (CPU) core that executes SIMD instructions ...; at least one system drive comprising at least one non-volatile storage medium ...; at least one first input/output (I/O) controller ...; and at least one second input/output (I/O) controller ..., wherein the processor, the SIMD instructions, the non-volatile storage medium and the at least one second I/O controller implement the accelerated ECC processing ...”

Cloudera’s software, however, is not configured to perform erasure coding as delivered. For this second, independent reason, Cloudera cannot be a direct infringer, regardless of how the customer ultimately configures the software.

### C. Cloudera’s Accused Software Product.

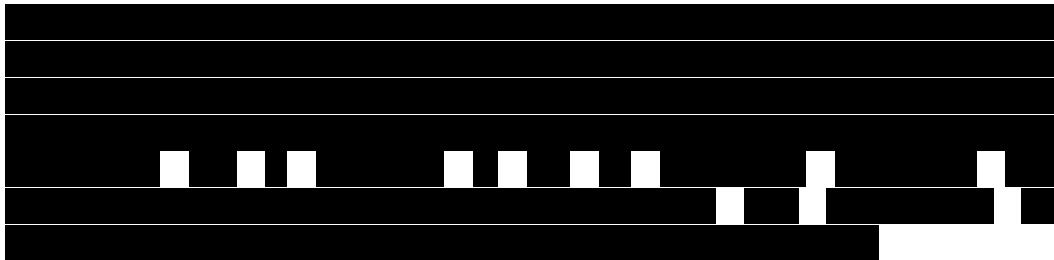
StreamScale accuses the Cloudera Distribution of Hadoop [REDACTED]

[REDACTED] [REDACTED] (“CDH” or the “Accused Products”) of infringing the Asserted Claims based on CDH’s data storage functionalities, in particular, its erasure coding functionality utilizing Intel’s Intelligent Storage Acceleration Library (“ISA-L”). [REDACTED]

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<sup>4</sup> StreamScale has suggested it intends to also accuse [REDACTED]. This potential change in the scope of Accused Products, however, would have no bearing on this Motion. The deficiencies in StreamScale’s infringement case addressed in this Motion would also apply to [REDACTED] and StreamScale has presented no evidence otherwise.

[REDACTED] CDH is a software program comprised of many different open-source software packages developed and distributed by the Apache Software Foundation—including Apache “Hadoop,” which includes as one of its components the “Hadoop Distributed File System” (HDFS)—as well as proprietary software known as “Cloudera Manager.” HDFS is a platform for storing large data files across clusters of computers. As Plaintiff’s expert states in his report:



Both plaintiff’s and defendant’s expert reports include [REDACTED]. To resolve this summary judgment motion, however, the Court need not delve into the technical details of CDH, HDFS, replication, or erasure coding. Only two undisputed facts matter. **First**, Cloudera only distributes software. [REDACTED]  
[REDACTED]  
[REDACTED]  
**Second**, HDFS’s default configuration is [REDACTED], not erasure coding. Thus, as provided by Cloudera, the software is not configured to do erasure coding. [REDACTED]  
[REDACTED]

[REDACTED] This fact is not disputed by StreamScale or its StreamScale's expert. [REDACTED]

### **III. STREAMSCALE HAS ONLY ALLEGED DIRECT INFRINGEMENT**

In the operative Complaint, StreamScale clearly and expressly alleges only direct infringement by Cloudera. Dkt. 67 at ¶¶112, 115, 134, 137, 154, 157, 194, 197, 214, 217. Similarly, in its Final Infringement Contentions against Cloudera, StreamScale only alleges direct infringement. [REDACTED]

[REDACTED] It is well-established that any allegation of indirect infringement, such as contributory infringement or inducement, must be specifically pleaded. *See Superior Indus., LLC v. Thor Glob. Enterprises Ltd.*, 700 F.3d 1287, 1296 (Fed. Cir. 2012) (finding that the pleading requirements set forth in *Bell Atl. Corp. v. Twombly*, 550 U.S. 544 (2007) and *Ashcroft v. Iqbal*, 556 U.S. 662 (2009) apply to claims of indirect infringement); *Affinity Labs of Texas, LLC v. Toyota Motor North America*, No. W:13-CV-365, 2014 WL 2892285, at \*8 (W.D. Tex. May 12, 2014) (dismissing indirect infringement claim for failure to meet pleading requirements of *Iqbal* and *Twombly*); *Havco Wood Prod., LLC v. Indus. Hardwood Prod., Inc.*, No. 10-CV-566-WMC, 2012 WL 12995496, at \*13 (W.D. Wis. May 23, 2012) (“Havco’s ability to assert a contributory or induced infringement claim, however,

depends on whether it has plead such a claim. Havco's amended complaint does not cite to any specific subsection under Section 271, nor does it contain any allegations to put IHP on notice of a claim for contributory or induced infringement. As such, the court finds that Havco's amended complaint is limited to a direct infringement claim."); *order amended on reconsideration*, No. 10-CV-566-WMC, 2012 WL 12995521 (W.D. Wis. July 5, 2012).

In a case such as this, where a defendant provides a component of a system that is later completed by a customer, plaintiffs typically plead induced infringement under 35 U.S.C. § 271(b). Indeed, with respect to defendant Intel, StreamScale expressly pleaded induced infringement in its Second Amended Complaint, including extensive allegations of the factors necessary to establish inducement by Intel. *See, e.g.*, Dkt. 67 at ¶¶ 103-04, 119-31.<sup>5</sup> With respect to Cloudera, however, StreamScale limited its allegations to direct infringement only.<sup>6</sup> Thus, to avoid summary judgment, StreamScale must present evidence that Cloudera itself directly infringes the asserted claims. It cannot.<sup>7</sup>

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<sup>5</sup> StreamScale later dismissed its claims against Intel and all other Defendants besides Cloudera without prejudice. Dkt. 103.

<sup>6</sup> StreamScale's decision to allege only direct infringement against Cloudera was likely deliberate, rather than an oversight. [REDACTED]

[REDACTED] Thus, even assuming StreamScale could establish direct infringement by a customer and the required scienter elements by Cloudera, a claim for induced infringement would have minimal potential damages. In any event, StreamScale's rationale for pleading only direct infringement is immaterial. Regardless of its motives, it is now too late in the case to add new infringement theories.

<sup>7</sup> StreamScale also does not assert infringement under the doctrine of equivalents. StreamScale's Final Infringement Contentions recite, *pro forma*, in the introduction to each chart that [REDACTED]

[REDACTED] but the charts provide no analysis of insubstantial differences or function/way/result. StreamScale's expert report on infringement also does not offer a doctrine of equivalents analysis with respect to any of the asserted claims. [REDACTED]

## **IV. LEGAL STANDARDS**

### **A. Summary Judgment.**

Summary judgment is appropriate when, drawing all justifiable inferences in the nonmovant's favor, "the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(a); *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 255 (1986). The court must afford all reasonable inferences and construe the evidence in the light most favorable to the non-moving party. *See id.* at 255. A "complete failure of proof concerning an essential element of the nonmoving party's case" renders summary judgment proper in favor of the moving party. *Celotex Corp. v. Catrett*, 477 U.S. 317, 323 (1986).

### **B. Infringement.**

Analysis of infringement is a two-step process. "First, the trial court determines the scope and meaning of the asserted claims." *Searfoss v. Pioneer Consol. Corp.*, 374 F.3d 1142, 1148 (Fed. Cir. 2004). "Second, the claims as construed by the court are compared limitation by limitation to the features of the allegedly infringing device." *Id.* A plaintiff asserting patent infringement bears the burden to prove that the defendant satisfies each and every limitation of each asserted patent claim. *Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1535 (Fed. Cir. 1991) ("[T]he failure to meet a single limitation is sufficient to negate infringement of the claim."). In patent cases, summary judgment of non-infringement is often warranted where—as in this case—"the parties do not dispute any relevant facts regarding the accused product." *Gen. Mills, Inc. v. Hunt-Wesson, Inc.*, 103 F.3d 978, 983 (Fed. Cir. 1997).

## **V. ARGUMENT**

Cloudera is entitled to summary judgment of noninfringement for two independent reasons. First, all the asserted claims recite a system that includes both hardware and software components.

Since Cloudera does not provide any hardware to its customers, it does not infringe the patents-in-suit. Second, all the asserted claims require that the claimed software be “configured to” perform specific erasure coding functionality, or to “implement” that functionality. [REDACTED]

[REDACTED] Cloudera, therefore, does not infringe the patents-in-suit, regardless of whether a customer ultimately later changes the configuration settings on its own to implement erasure coding.

**A. Cloudera Does Not Provide Hardware, And Therefore Does Not Infringe the Patents-in-Suit.**

**1. The System Claims.**

Of the 28 asserted claims, 25 recite “A system for accelerated error-correcting code (ECC),” or “A system adapted to use accelerated error-correcting code (ECC),” or “An accelerated error-correcting code (ECC) system,” where the body of the claim includes hardware. The chart on page 4 above lists the specific hardware limitations of each independent system claim.

The Federal Circuit has consistently held that to directly infringe a system claim, a party must make, use, or sell “each and every” element of the claimed system. *Centillion Data Sys., LLC v. Qwest Comm’ns*, 631 F.3d 1279, 1284 (Fed. Cir. 2011). In *Centillion*, the patent disclosed and claimed “a system for collecting, processing, and delivering information from a service provider, such as a telephone company, to a customer.” *Id.* at 1281. The claims required both a “back-end” system for data processing maintained by the service provider, … and a “front-end” personal computer maintained by the customer. *Id.* The defendant, Qwest, maintained “back-end” servers and provided billing software to customers to install on their personal computers. *Id.* The primary question on appeal was whether either Qwest or its customers “used” the entire claimed system pursuant to 35 U.S.C. § 271(a), and therefore directly infringed. The Court first reiterated its holding from *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282 (Fed. Cir. 2005), “that to ‘use’

a system for purposes of infringement, a party must put the invention into service, i.e., control the system as a whole and obtain benefit from it.” *Centillion*, 631 F.3d at 1284 (citing *NTP*, 418 F.3d at 1317). The Court then held that Qwest’s customers “used” the system by creating a query or subscribing to receive regular billing information, because these actions put the entire system into service—the customer actions invoked both the personal computer and the back-end Qwest servers. *Centillion*, 631 F.3d at 1285 (“it is the customer initiated demand for the service which causes the back-end system to generate the requisite reports. This is ‘use’ because, but for the customer’s actions, the entire system would never have been put into service. This is sufficient control over the system under *NTP*, and the customer clearly benefits from this function.”) However, the Court also held that Qwest itself did not directly infringe, as a matter of law, because Qwest did not initiate “use” of the entire system:

To “use” the system, Qwest must put the claimed invention into service, i.e., control the system and obtain benefit from it. *NTP*, 418 F.3d at 1317. While Qwest may make the back-end processing elements, it never “uses” the entire claimed system because it never puts into service the personal computer data processing means. **Supplying the software for the customer to use is not the same as using the system.**

*Id.* at 1286 (emphasis added).<sup>8</sup> Similarly, the Court held that Qwest could not be liable for “making” the system under § 271(a), because it did not manufacture all the elements and combine them:

Qwest manufactures only part of the claimed system. In order to “make” the system under § 271(a), Qwest would need to combine all of the claim elements—this it does not do. The customer, not Qwest, completes the system by providing the “personal computer data processing means” and installing the client software.

The Court then remanded for litigation of Centillion’s indirect infringement case. *Id.* at 1286 n.3, 1290.

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<sup>8</sup> The Court also rejected Centillion’s argument that Qwest could be vicariously liable for the customers’ “use” under *Akamai*, because “it is entirely the decision of the customer whether to install and operate this software on its personal computer data processing means.” *Id.* at 1286-87.

Since *Centillion*, the Federal Circuit has reaffirmed that where a system claim requires both hardware and software, merely providing the software is not direct infringement. In *Synchronoss Technologies, Inc. v. Dropbox, Inc.*, 987 F.3d 1358 (Fed. Cir. 2021), the patent described and claimed “a system for synchronizing data across multiple systems or devices connected via the Internet.” *Id.* at 1361. The claims required both hardware and software residing on the hardware, but the defendant provided only the software. *Id.* at 1368 (“The evidence shows that Dropbox provides its customers with software for download but no corresponding hardware.”) The Court held that “Because Dropbox does not provide its customers with any hardware in conjunction with its accused software, Dropbox does not make, sell, or offer for sale the complete invention.” *Id.* The Court further held that Dropbox did not itself “use” the system, citing *Centillion*, and affirmed summary judgment of noninfringement. *Id.* at 1369. Other cases have held similarly. *See, e.g., Acceleration Bay LLC v. 2K Sports, Inc.*, 15 F.4th 1069, 1077-78 (Fed. Cir. 2021) (defendant did not directly infringe plaintiffs’ claims to a virtual network by selling software, because “the customer, not [the defendant], completes the system by providing the [hardware component] and installing the client software.”).

This case is controlled by *Centillion* and its progeny. It is undisputed that [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] As in *Centillion* and *Synchronoss*, Cloudera therefore cannot directly infringe the system claims. It does not make or sell the complete system, nor does it put the entire system into service. If anyone does, it is Cloudera’s customers, not Cloudera. *See Centillion*, 987 F.3d at 1285-86.

## 2. Claims 34-36 Of The 8'296 Patent.

As noted above, three of the asserted claims, Claims 34-36 of the 8'296 Patent, are structured differently than the remaining asserted claims. While each still recites a “system” that includes hardware components and software functionality, the hardware components are initially recited in a lengthy preamble. Claim 34, the independent claim, is reproduced below:

34. A non-transitory computer-readable storage medium containing a computer program comprising a plurality of computer instructions for performing accelerated error-correcting code (ECC) processing on a computing system comprising a processing core for accessing instructions and data from a main memory, the computer instructions being configured to implement an erasure coding system when executed on the computing system by performing the steps of:

- arranging original data as a data matrix in the main memory;
- arranging first factors as an encoding matrix in the main memory, the first factors being for encoding the original data into check data, the check data being arranged as a check matrix in the main memory; and
- generating the check data using a parallel multiplier for concurrently multiplying multiple data entries of a matrix by a single factor, the generating of the check data comprising ordering operations through the data matrix and the encoding matrix using the parallel multiplier.

The question is whether the hardware components—the “processing core” and the “main memory”—are limitations of the claim. Under clear precedent, they are.

“In general, a preamble limits the invention if it recites essential structure or steps, or if it is necessary to give life, meaning, and vitality to the claim.” *Catalina Mktg. Int'l v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (internal quotation marks omitted). “Conversely, a preamble is not limiting where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.” *Id.* (internal quotation marks omitted).

Here, the “processor core” and “main memory” of Claim 34 are indeed necessary to recite a structurally complete invention. First, the claim relies on preamble language for antecedent basis—it identifies “a main memory” in the preamble, and references “the main memory in the

body.” The Federal Circuit has frequently held that use of the preamble for antecedent basis suggests the preamble is limiting, because “it indicates a reliance on both the preamble and claim body to define the claimed invention.” *Id.* See also *Eaton Corp. v. Rockwell Int’l Corp.*, 323 F.3d 1332, 1339 (Fed. Cir. 2003) (“When limitations in the body of the claim rely upon and derive antecedent basis from the preamble, then the preamble may act as a necessary component of the claimed invention.”).

Second, both the processing core and main memory are “essential structure” for performing the invention. The functional steps of the claim body require both the processing core (“generating the check data using a parallel multiplier”) and the main memory (“arranging… in the main memory”). The preamble here does more than just “state a purpose or intended use for the invention.” Rather, it introduces structure—a “computing system” with a processing core and a main memory—that are essential to performing the functional steps in the claimed body.

The Federal Circuit’s decision in *Microprocessor Enhancement Corp. v. Texas Instruments Inc.*, 520 F.3d 1367 (Fed. Cir. 2008), is instructive. In *Microprocessor*, the claim included a “preamble within a preamble” structure, as follows:

1. A method of executing instructions in a pipelined processor comprising:  
[structural limitations of the pipelined processor];  
the method further comprising:  
[method steps implemented in the pipelined processor].

*Id.* at 1374. The Court rejected an indefiniteness challenge to the claim, but then made clear that “[d]irect infringement of claim 1 is clearly limited to practicing the claimed method in a pipelined processor possessing the requisite structure.” *Id.* at 1374-75.

Claim 34 here has a similar structure:

34. A non-transitory computer-readable storage medium containing a computer program comprising for performing accelerated error-correcting code

(ECC) processing on a computing system comprising

[structural limitations of the computer system]

the computer instructions being configured to implement an erasure coding system when executed on the computing system by performing the steps of:

[functional steps implemented in the computer system]

As in *Microprocessor*, direct infringement here is “clearly limited” to executing the computer program in a computer system “possessing the requisite structure.” The computer program alone cannot directly infringe because the claim makes clear that it must be implemented on a computer system having certain structural elements, and those elements are integral to the functional steps recited in the claim body. The computer system structural components cannot be ignored simply because they are first introduced in the preamble, instead of in the claim body. *See also SanDisk Corp. v. Memorex Products, Inc.*, 415 F.3d 1278, 1284 (Fed. Cir. 2005) (where preamble recited “A method of operating a computer system including a processor and a memory system,” then claim body referenced “said processor” and “the memory array” preamble was limiting); *Seachange Int’l, Inc. v. C-COR, Inc.*, 413 F.3d 1361, 1376 (Fed. Cir. 2005) (where preamble recited “a processor system” with “at least one central processing unit” and “at least one mass storage subsystem,” then referenced “said processor systems” in the method steps, preamble was limiting).

Claims 34-36, therefore, like the system claims, cannot be directly infringed by Cloudera, which only distributes software. Direct infringement requires combining the computer program with the structural computer system elements, which would only be done by Cloudera’s customers. Indeed, StreamScale’s expert agreed in his deposition that [REDACTED]  
[REDACTED]  
[REDACTED]

[REDACTED]

**B. The Accused Software, As Distributed By Cloudera, Is Not “Configured To” Implement Erasure Coding, And Cloudera Therefore Does Not Directly Infringe.**

**1. The 8’296 Patent, The ’374 Patent, The ’759 Patent, And The 10’296 Patent.**

Each of the asserted independent claims of the 8’296 Patent, the ’374 Patent, the ’759 Patent, and the 10’296 Patent Claims recites a system comprising components “configured to implement an [] erasure coding system.”

StreamScale has alleged that CDH infringes when it performs the erasure coding functionality using Intel’s ISA-L library. As demonstrated below, however, there is no genuine dispute that the accused erasure coding functionality is disabled by default in CDH, and StreamScale has not identified any evidence that the default configuration is ever modified by Cloudera in any accused CDH product as sold.

The Federal Circuit and courts in the Fifth Circuit have consistently held that a claim element reciting a structure “configured to” perform a function is infringed only if the accused structure is actually set to perform the function, as opposed to merely capable of performing the function.

As instructed in *Typhoon* and *Nazomi*, a structural claim element that is defined by the function it performs—rather than a function it might be modified or programmed to perform—must be in a state capable of performing the function. ... Accordingly, the Court rejects that the plain and ordinary meaning of the “adapted to [perform functions]” or “configured to [perform functions]” claim language encompasses structure that is merely capable of performing the functions in the abstract. Under their plain and ordinary meanings, **these terms require structure that is in a state to perform the functions (i.e., structure that is “configured to” or “adapted to” perform the functions) and does not encompass structure that may be modified to perform that function but is not in that modified state.**

*Huawei Techs. Co. v. Verizon Commc’ns, Inc.*, No. 2:20-CV-00030-JRG, 2021 WL 150442, \*18-20 (E.D. Tex. Jan. 15, 2021) (citing *Typhoon Touch Techs. v. Dell, Inc.*, 659 F.3d 1376 (Fed. Cir.

2011) and *Nazomi Communs., Inc. v. Nokia Corp.*, 739 F.3d 1339 (Fed. Cir. 2014)) (emphasis added; some citations omitted); *Wapp Tech Limited P'ship v. Seatle Spinco, Inc.*, No. 4:18-CV-469, 2020 WL 1983087, \*20 (E.D. Tex. 2020) (construing “configured to” to mean “actually programmed to”); *Nevro Corp. v. Bos. Sci. Corp.*, 955 F.3d 35, 42 (Fed. Cir. 2020) (construing “configured to” to mean “programmed to”); *Salazar v. HTC Corp.*, No. 216CV01096JRGGRSP, 2018 WL 4242416, \*2 (E.D. Tex. May 1, 2018) (“Citing testimony of Roy Griffin, Salazar’s infringement expert, Defendant contends Salazar has evidence the accused devices are *capable of* being so configured, which is insufficient to meet the limitation. According to Defendant, the claims require *actual* configuration, which does not happen until a user connects the phones to third-party servers and downloads command codes for a particular external device. … the Court construes ‘configured to’ to require some particularized arrangement of the memory device for a specific purpose. The Court therefore rejects Salazar’s position that a mere capability of storing, or capability of being configured to store, is sufficient.”); *Nevro Corp.*, 955 F.3d at 40 (“The asserted claims contemplate that ‘configured to’ requires programming the signal generator (i.e., setting parameters) to generate the claimed signals.”).

Showing *that* a structure is “capable of” performing a function, by itself, is legally insufficient to satisfy “configured to” claim language. “[T]he Court of Appeals for the Federal Circuit has noted that the phrase ‘configured to’ has a narrower meaning than merely ‘capable of’ or ‘suitable for.’” *Wapp*, 2020 WL 1983087, \*20 (collecting cases); *see also TQ Delta, LLC v. CommScope Holding Co., Inc.*, No. 2:21-CV-309-JRG, 2022 WL 2071073, \*8 (E.D. Tex. June 8, 2022) (same); *Sipco, LLC v. Abb, Inc.*, No. 6:11-cv-0048, 2021 WL 3112302, \*12 (E.D. Tex. July 30, 2012) (noting that construing “configured to” perform a function as “may be configured [to]” perform a function “would eliminate any meaningful limits to the claims”).

Therefore, to show direct infringement of the “configured to [perform functions]” elements of the 8’296 Patent, the ’374 Patent, the ’759 Patent, and the 10’296 Patent Claims, StreamScale must show that the accused CDH products are actually set to perform the claimed functions, *i.e.*, all relevant configurations are programmed to perform the functions.

As described in detail above, however, Cloudera configures CDH by default to implement

[REDACTED] not erasure coding, let alone erasure coding using Intel’s ISA-L. [REDACTED]  
[REDACTED]  
[REDACTED] StreamScale’s technical expert, Dr. Conte, does not dispute this. [REDACTED] [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED].

StreamScale has not identified any evidence that the default setting is ever modified in any CDH product as sold. At most, StreamScale has presented evidence to support an allegation that CDH is capable of performing the accused erasure coding functionality if the default is modified by an end user.<sup>9</sup> Indeed, Dr. Conte admitted so during his deposition:

[REDACTED]  
[REDACTED]  
[REDACTED]

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<sup>9</sup> Cloudera does not concede that accused functionality meets any Asserted Claim.

<sup>10</sup> Putting aside the inappropriateness for StreamScale’s technical expert to offer his opinions on caselaw, the cited case, *Fantasy Sports Props. v. Sportsline.com, Inc.*, 287 F.3d 1108 (Fed. Cir. 2002), is inapposite. *Fantasy Sports Props.* dealt with a claim which does not recite the term “configured to.” Rather, the court construed the term “programmable selection means.” *Fantasy Sports Props.*, 287 F.3d at 1117 (italics in the original).

The 8'296 Patent, the '374 Patent, the '759 Patent, and the 10'296 Patent Claims, however, require more than a capability. They require a structure configured to perform the claimed functions. As demonstrated above, the accused functionality, erasure coding using Intel's ISA-L, is disabled by default in the accused CDH products, and StreamScale has adduced no evidence to suggest the otherwise. Thus, Cloudera does not directly infringe, and summary judgment of noninfringement should be entered on the 8'296 Patent, the '374 Patent, the '759 Patent, and the 10'296 Patent Claims. *See, e.g., Ball Aerosol & Specialty Container, Inc. v. Ltd. Brands, Inc.*, 555 F.3d 984, 994-95 (Fed. Cir. 2009) (reversing a district court's finding of infringement and remanding with instructions to issue a summary judgment of noninfringement when the "claim language clearly specifie[d] a particular configuration," the plaintiff had no proof that the accused structure "was ever placed in the infringing configuration," and it was "clear" that the accused structure did "not necessarily have to be placed in the infringing configuration").

## **2. The '259 Patent.**

The asserted independent claim of the '259 Patent recites a structure that "implement[s]" an erasure coding system. StreamScale has alleged that CDH infringes because it has the capability of performing the erasure coding functionality using Intel's ISA-L library. As discussed above, there is no genuine dispute that CDH, as sold, implements 3X replication, and the accused erasure coding functionality is disabled by default in any CDH. StreamScale. Thus, summary judgment of noninfringement should be entered on the '259 Patent as well.

## **VI. CONCLUSION**

For the reasons provided above, the Court should enter summary judgment of non-infringement.

Dated: July 28, 2023

Respectfully submitted,

By: /s/ Christopher Kao  
Christopher Kao (*admitted*)

christopher.kao@pillsburylaw.com

Brock S. Weber (*admitted*)

brock.weber@pillsburylaw.com

**Pillsbury Winthrop Shaw Pittman LLP**

4 Embarcadero Center, 22nd Floor

San Francisco, CA 94111

Telephone: 415.983.1000

Facsimile: 415.983.1200

Steven P. Tepera (TX Bar No. 24053510)

steven.tepera@pillsburylaw.com

Benjamin L. Bernell (TX Bar No. 24059451)

ben.bernell@pillsburylaw.com

**Pillsbury Winthrop Shaw Pittman LLP**

401 Congress Avenue, Suite 1700

Austin, TX 78701-3797

Telephone: 512.580.9600

Facsimile: 512.580.9601

Audrey Lo (*pro hac vice*)

audrey.lo@pillsburylaw.com

**Pillsbury Winthrop Shaw Pittman LLP**

2550 Hanover Street

Palo Alto, CA 94304

Telephone: 650.233.4500

*Counsel for Defendant Cloudera, Inc.*

**CERTIFICATE OF SERVICE**

The undersigned hereby certifies that a true and correct copy of the above and foregoing document has been served on all counsel of record via electronic mail on July 28, 2023.

/s/ Christopher Kao